Data Network Environment Assessment

Wide Area Transport

- ***Ameritech Leased Analog Connections***

  At one time, the SCaDA networks primarily used dedicated cable in the PLD conduit system. The cable deteriorated and the systems were migrated to Ameritech leased analog circuits.

  Point to point connections for the Mainframe Controller network and most of the connections for the SCaDA networks are provided by Ameritech leased analog circuits. Including all the different types of analog data circuits, the City presently has approximately 643 analog data circuits leased from Ameritech. SCaDA networks appear to be using 206 of these circuits. There are many cases where multiple circuits are used to connect two major departmental buildings, primarily for Police and Water and Sewerage. A total of 243 radio circuits connect from many common towers, individually to Police, Fire, and Water and Sewerage headquarters, with the Fire radio circuits connecting to Police headquarters. A sampling of 96 of the 194 Mainframe Controller circuits indicated 12% were inactive and an additional 34% were likely not in use. We found that in many cases, it is likely that the particular applications requiring the connections are no longer in use, but the equipment and leased circuit are still in place.

- ***Ameritech Leased Digital Connections***

  The DRMS Network accounts for approximately (256) 56Kbps, T-1 (1.54Mbps) and T-3 (45Mbps) data circuits. Based on active data paths, however, it appears that approximately 182 of these connections are presently active. 12 of these circuits are in the process of being configured to provide redundancy for Police operations.

- ***Ameritech Digital Dial-up Connections (ISDN)***

  ISDN Basic Rate Interface (BRI) connections are used by the DRMS Network and the Video network.

Data Network Environment Assessment

Wide Area Transport

- ***Data***

  The DRMS Network uses dial-up connections as permanent point-to-point circuits. The network equipment dials the connection and does not disconnect unless the call is dropped due to a line problem. These types of circuits provide a fairly low capacity of service (128Kbps), and are primarily used by the Fire Department for connections between the firehouses and Fire Headquarters. The Municipal Parking Division also uses ISDN circuits from its parking lots, routing the data through the Fire Headquarters to the rest of the network. To accommodate this functionality, each of the 46 firehouses and three parking lots has ISDN connectivity (BRI). Fire Headquarters has five high capacity ISDN connections (PRI) to support connections to the firehouses and parking lots. Additionally, the eight neighborhood city halls, 46 recreation centers, and two health department sites use ISDN connections to communicate with the City's DRMS Network through the Municipal Center. These connections are only established when necessary for data transfer.

- ***Video***

  Video conferencing systems located at the Police Precincts and at the 36th District Court use an ISDN network for Video Arraignments. Under the present configuration, up to three precincts can communicate with the court simultaneously, from either the cell block or the witness conference room. This accounts for 9 of the 15 ISDN lines at the 36th District Court.

Data Network Environment Assessment

Issues of Concern

- Interviews with IT staff indicate considerable redundancy of leased circuits have been deployed in an effort to circumvent outages due to circuit failure and avoid sometimes lengthy repair times with Ameritech leased circuits.
- Although there are considerable redundant connections from many sites to the Municipal Center, they all appear to use the same entrance and could result in a total loss of communications if the entrance cable was damaged (e.g., road construction).
- Many of the redundant point-to-point circuits that are used for redundancy do not appear to be connected to equipment. Therefore, a manual process may have to take place to make use of the back-up circuit and restore service.
- Even with redundancy considered, it appears that more circuits are being leased between sites than appear to be necessary.
- Based on the service address information, some leased circuits appear to provide connectivity between equipment in the same building.
- Multiple radio and other analog lines exist between the same sites. Although they likely connect to different independent systems, it may be possible to deliver the traffic on a single common transport.
- Multiple analog and digital circuits connect to many of the same locations. This provides the potential opportunity to combine these functions on a single transport connection.
- With potentially 46% of the Mainframe Controller circuits not in use, it may be possible to recognize considerable cost savings by disconnecting inactive circuits.
- Ameritech billing records did not have clearly defined costs for numerous circuits, and therefore, it is possible that the City is not being charged for these circuits, the charges are applied elsewhere, or the circuits are not in service.
- The Municipal Center has no central power back-up to support the electronics or the air conditioning.